Analysis of the copyright issues of AI-generated materials

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Abstract: In recent years, a wave of artificial intelligence has swept the entire human society, and similar to many other products in the digital environment, artificial intelligence has changed the traditional human-led way of creating works in the process of transforming from creative assistants to autonomous creators in the field of copyright law. Since intellectual property rights protect the intellectual achievements of human beings, when an artificial intelligence machine has the ability to create and complete the content generated by artificial intelligence, how should such creative achievements be evaluated, and whether such works can be protected by law? Whose "ideological expression" does such an AI-generated result belong to? And who belongs to the copyright of AI-generated works needs to be discussed.

1. Introduction

*Artificial intelligence wo*rks refer to the creations in the form of works generated by artificial intelligence or its applications through the expression elements of the work (such as words, sounds, graphics, images, actions, etc.).[1] There are generally two technical paths for the creation of artificial intelligence: one is "code definition". Before the era of big data, code was defined as a means often used by artificial intelligence creation, and the way of thinking and structure of human beings were set into machines by program code. Taking the writing intelligent machine as an example, in order to make the machine write sentences that can be understood by humans, it is necessary to compile the code to enable the machine to master the meta-concepts in human writing thinking, such as the subject, predicate, object and other sentence components, and input the word structure in human writing thinking to the machine. From the point of view of the degree of contribution of the machine to the final generated content, the program code is more of a creative tool, that is, an auxiliary means, and the generated content is the work completed by the machine as a creative tool.

The second is "data training". Since the emergence of big data storage and processing technology at the beginning of this century, artificial intelligence has opened up a technical path for data training algorithms. Data training integrates algorithms, computing power and data, resulting in "machine-Xi" artificial intelligence, which can analyze and perform statistical data as well as mathematical modeling, so it has advanced computing power that mimics human thinking patterns. It can be said that the intelligence of the machine will increase with the continuous increase of data, and evolve with the continuous enhancement of computing power. Taking the writing intelligent machine as an example, the machine is no longer committed to understanding the meta-concepts and word structure

in human writing thinking, but counts and analyzes the high-frequency collocation of words from massive texts, extracts common phrases and sentence patterns, and produces human-readable texts according to the designed data model. That is, based on massive data, the machine forms many sections that can express the content, and then uses the language model to generate the consciousness expression that human needs. The product of this kind of intelligent machine is actually a work completed by the integration of man and machine, that is, a creation made under the guidance or intervention of humans. That is, artificial intelligence is based on data storage, machine algorithms are used as means, and intelligent products are used as results.[2]

2. Attributes of AI-generated works

There are different theories about the attributes of works generated by AI, mainly including negative and affirmative. On the one hand, from the perspective of the subject, it is believed that the work must be the creation of a natural person, while artificial intelligence itself is a machine and does not have the attributes of a natural person, so its product naturally cannot be identified as a work under the Copyright Law; on the other hand, it is evaluated based on how it is generated, and believes that the product is only an application of an algorithm, so it does not meet the condition of originality.

In the affirmative, an intelligent product that meets the minimum inventive step requirement can be considered as a work. Clarifying the definition of "work" has become the core requirement for accurately judging the attributes of AI-generated works. Article 3 of the Copyright Law stipulates that a work refers to an intellectual achievement in the fields of literature, art and science that is original and can be expressed in a certain form. The work consists of the following four parts: first, it is in the field of literature, art and science, second, it is original, third, it can be expressed in a certain form, and fourth, it is an intellectual achievement. Objectively speaking, most of the products generated by artificial intelligence are music, poems, paintings, etc., which meet the two criteria of "expressed in a certain form" and "within the fields of literature, art, and science", so the following article mainly elaborates on originality and intellectual achievements.

Judgment on intellectual achievements in artificial intelligence products. First of all, in terms of external expression, there is no essential difference between the products of artificial intelligence and the intellectual achievements of humans. It is an expression of thoughts, emotions, and cognitions that can be understood by humans. Artificial intelligence products are not disordered words or symbolic combinations that cannot be understood by humans, but expressions that are highly consistent with the characteristics of human-created written works in terms of language style, phrase structure, grammatical structure, writing style, etc., and can clearly convey to people the content to be expressed in the work. Secondly, based on the internal working principle, AI products are not fixed results produced by the execution of established algorithms and programs, but contain a certain meaning of intellectual "creation". On the one hand, artificial intelligence corresponds to human intellectual activity. For example, computer hardware, as the basis of artificial intelligence, corresponds to the physiological process of the lowest level of human intellectual activity, the computer language of artificial intelligence corresponds to the primary information processing of human intellectual activity, and the program of artificial intelligence itself corresponds to the highest level and thinking strategy of human intellectual activity.[3] Therefore, its intelligence restores the mode of human thinking, and can complete the imitation and replacement of human thoughts and behaviors, that is, artificial intelligence works also exist "intellectual", which meets the definition of intellectual achievements in copyright.

Recognition of originality. "Originality" as a necessary condition for becoming a work. On the one hand, originality lies in the originality and originality of the creation.[4] In short, it is an independent creation of the author without plagiarism. As long as the former is the result of the AI itself and

different from the result of others, it should be regarded as having the condition of originality, and there is no need to set separate standards and impose strictness. On the other hand, the basis of originality is the personality element possessed by the expression of ideas, that is, "the work is a reflection of the author's personality". The so-called personality is not only contained in the inner thoughts of human beings, but also manifested outside the expression of human thoughts. The expression of ideas, such as positions and opinions, experiences and emotions, is the expression of the personality of the creative subject, that is, the personality. In the creation of human-machine synthesis, machine works are still works completed by intelligent systems under human guidance.

In summary, the determination of originality is based on the elements of originality and personality. In the era of artificial intelligence, the standard of originality should shift from author-centrism to work-centrism. [5] In terms of "expression of ideas", i.e., the appearance of the work, it is difficult to distinguish between works made by AI and works produced by humans. As long as they meet the requirements of originality, they are "copyrightable". In the author's opinion, as long as there is human intervention, it means that the generated content involves the expression of human thoughts, and the copyright law cannot simply take a position of exclusion.

3. Copyright legislation and legal practice from the perspective of comparative law

As for the legislative issue of copyright protection of AI-generated works, jurists in most countries are more recognized. In 2016, Japan's Intellectual Property Strategy Headquarters proposed to revise the Intellectual Property Law to address the protection of AI-generated content, and sought to discuss the establishment of a registration system for AI-generated content (similar to the Trademark Law). [6] The United States also established the CONTU Committee, issued a special study on copyright in computer creations, and allowed programmers to register copyright in written works created by computer software. As far as the legislative trends of other countries are concerned, there are generally two situations: one is to use the existing copyright provisions to expand the scope of application of the law and provide copyright protection for intelligent creations, and the other is to draft copyright-related laws to legally regulate and determine the "independent intellectual creation standards" of artificial intelligence, so as to facilitate the determination of copyright ownership. Anglo-American state utilitarianism predominates the interpretation that copyright is not a natural human right, but rather that legislators encourage and motivate more people to engage in specific activities that are beneficial to society. [7]

In the copyright infringement case of Tencent v. Ying, a technology company, the Nanshan District Court in Shenzhen held that the articles generated by Tencent using Dreamwriter (a copywriting robot developed by Tencent) were original, and their creations were works within the meaning of the Copyright Law. [8] Therefore, AI-generated works should be considered as works under copyright law.

4. Copyright attribution of AI-generated objects

The virtual author theory in the United States holds that the virtual legal personality of artificial intelligence should be determined, and the substantive rights should be transferred from the virtual legal subject to the natural person or legal person after the assignee of the rights is determined. However, with the further development of AI, more powerful AI or superAI will emerge or emerge, as well as more radical views that AI can be recognized and given an actual legal personality. Because of the flexibility of "deemed authorship", common law countries often use this model to incentivize investment and creativity. [9] The theory argues that AI itself can become a non-human author, and that it should be given an independent legal personality, and that non-human authors enjoy copyright. The author believes that the establishment of this theory gives artificial intelligence a virtual legal

personality, and we have to face up to the insurmountable obstacles in morality, ethics and social evaluation. This theory exceeds the current stage of development, even if artificial intelligence itself can be created, it is still of little significance to give the intelligent robot itself a legal personality, and the robot is regarded as the subject of rights, which is not in line with China's current private law system and ethics.

The essence of copyright protection in China is to protect the creative intellectual labor invested by the author in the creation of the work, so the general copyright belongs to the author, that is, the person who contributes more creative intellectual labor is the author. For example, if you use AI to create a novel, you only need to enter the keywords "small bridge, flowing water, and people", and the AI will automatically generate an article of more than 1,000 words. Machines work according to the logic of statistical probability. In fact, it is a process of enforcing the developer's wishes (reflected in the choice of data, preferences for statistical methods, etc.), where the developer is considered the author. In addition, when the creative intellectual labor invested by the user occupies the dominant position of the product, the AI executes the user's instructions, and the user is the author of the AI product. The author believes that the current degree of development of artificial intelligence is limited, and the degree of intelligent creation is limited, and the main thing is still to implement the wishes of developers and owners, so attributing artificial intelligence generated objects to developers or owners is of practical significance and more convincing for most people. And when infringement occurs, it is easier for the author to be liable.

5. Conclusion

Professor Wu Handong believes that "all jobs that can be described, important, with fixed rules and standard answers, have the possibility of being replaced by intelligent robots."[10]At present, the legal requirements for giving legal personality to intelligent robots in legislation are not yet mature, but it is necessary to take precautions and discuss relevant issues theoretically. With regard to the copyright issues brought about by AI and the large number of products generated thereby, the copyright system should be based on an open and inclusive attitude, and actively seek a protection path that can be reasonably regulated, rather than clinging to the defects and excluding them from the scope of protection out of fear of new things. Based on the principle of proportionality and the consideration of procedural design, in order to minimize the cost of legislation and implementation, and to maintain the stability of the law, AI-generated works should be incorporated into the existing copyright legal system by means of legal interpretation and procedural adaptation.

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